CIVIL-TECH CONSULTANTS AND ENGINEERS

Building & Highway Material Testing Laboratory

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Job No.: CTCE/BBMP/KRIDL/W.No.13/BM/Gradation/2017-18 10.01.2018

TEST REPORT ON GRADATION OF BITUMINOUS MACADAM MIX

* Customer	:	**Asst. Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore.
* Agency	:	**Technical Manager (West),** KRIDL, Bangalore.
* Name of work	:	Improvements to Roads and asphalting at pipeline road left side and other roads in Mallasandra Ward No.13 in Shettyhalli Sub Division , BBMP, Bangalore.
* Reference	:	BBMP/EE/DD/WO/147/2017-18 Dated: 21.12.2017
* Sample ID	:	Pipeline roads in Mallasandra in Ward No.13.
Technical Reference	:	IS:2386 and IRC:SP:11-1984
Date of Testing	:	10.01.2018

GRADATION AFTER EXTRACTION

Sieve Size in mm	Trail 1				Specified Limits as per MORTH specification table 500-04 (Grading-2)
	Weight Retained, gm	% Retained	%Cummulative Retained	% Passing	
26.5	0	0	0	100	100
19	33.45	6.94	6.94	93.06	90-100
13.2	84.21	17.47	24.41	75.59	56-88
4.75	256.6	53.24	77.65	22.35	16-36
2.36	45.25	9.39	87.04	12.96	4-19
0.3	33.15	6.88	93.91	6.09	2-10
0.075	12.25	2.54	96.45	3.55	0-8

Sieve Size in mm	Trail 2				Specified Limits as per MORTH specification table 500-04 (Grading-2)
	Weight Retained, gm	% Retained	%Cummulative Retained	% Passing	
26.5	0	0	0.00	100	100
19	28.56	5.93	5.93	94.07	90-100
13.2	85.63	17.77	23.69	76.31	56-88
4.75	256.4	53.20	76.89	23.11	16-36
2.36	42.32	8.78	85.67	14.33	4-19
0.3	30.22	6.27	91.94	8.06	2-10
0.075	8.25	1.71	93.65	6.35	0-8

*Information is furnished by the Customer/Representative.

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Job No: CTCE/BBMP/KRIDL/W.No.13/BM/Agg.G/2017-18 10.01.2018

TEST REPORT ON GRADATION OF AGGREGATES

* Customer	:	**Asst. Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore.
* Agency	:	**Technical Manager (West),** KRIDL, Bangalore.
* Name of work	:	Improvements to Roads and asphalting at pipeline road left side and other roads in Mallasandra Ward No.13 in Shettyhalli Sub Division , BBMP, Bangalore.
* Reference	:	BBMP/EE/DD/WO/147/2017-18 Dated: 21.12.2017
* Sample ID	:	Hot Mix Plant, Bangalore
Technical Reference	:	IS : 2386(Part -1)-1963 (RA-2011)
* Type of Mix	:	Bituminous Macadam
Date of Testing	:	10.01.2018

Total Weight of Sample: **5150** gm

Sieve Size, mm	Weight Retained, gm	% Retained	Cummulative % Retained	% Passing	Grade-II As per MORTH	Remarks
26.5	0	0	0	100	100	Gradation satisfies Grade-II MORTH Table 500-4 specification
19	340	6.60	6.60	93.40	90-100	
13.2	1550	30.10	36.70	63.30	56-88	
4.75	1580	30.68	67.38	32.62	16-36	
2.36	960	18.64	86.02	13.98	4-19	
0.3	415	8.06	94.08	5.92	2-10	
0.075	125	2.43	96.50	3.50	0-8	

Total Weight of Sample: **5200** gm

Sieve Size, mm	Weight Retained, gm	% Retained	Cummulative % Retained	% Passing	Grade-II As per MORTH	Remarks
26.5	0	0	0	100	100	Gradation satisfies Grade-II MORTH Table 500-4 specification
19	330	6.35	6.35	93.65	90-100	
13.2	1560	30.00	36.35	63.65	56-88	
4.75	1560	30.00	66.35	33.65	16-36	
2.36	965	18.56	84.90	15.10	4-19	
0.3	600	11.54	96.44	3.56	2-10	
0.075	100	1.92	98.37	1.63	0-8	

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T-2377

Job No.: CTCE/BBMP/KRIDL/W.No.13/CSR-01/523a/QB(BC)/2017-18 10.01.2018

TEST REPORT ON DETERMINATION OF BITUMEN CHARACTERISTICS

*** Customer**	:	**Asst. Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore.
*** Agency**	:	**Technical Manager (West),** KRIDL, Bangalore.
*** Name of work**	:	Improvements to Roads and asphalting at pipeline road left side and other roads in Mallasandra Ward No.13 in Shettyhalli Sub Division , BBMP, Bangalore.
*** Reference**	:	BBMP/EE/DD/WO/146/2017-18 Dated: 21.12.2017
*** Sample ID**	:	Bitumen
Source/ Location	:	Hot Mix Plant, Bangalore.
Sample Received on	:	08.01.2018
Period of Testing	:	08.01.2018 to 10.01.2018

The results of the tests conducted on the bitumen sample are as follows:

Sl. No	Description	Test Method as per IS	Test Result	Requirement as per IS:73:2013
1	Penetration at 25 ^{0}C, 1/10 mm	IS :1203 -1978 (RA-2014)	68	60 to 70
2	Softening point, ^{0}C	IS :1205 -1978 (RA-2014)	46	Min. 45
3	Ductility at 27^{0}C, cm	IS :1208 -1978 (RA-2014)	100 >	Min. 50
4	Flash Point, ^{0}C	IS :1209 -1978 (RA-2014)	312	Min. 220

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VIDYARANI P.K.
Technical Manager

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Job No.: CTCE/BBMP/KRIDL/W.No.13/BC/AIV/2017-18 10..01.2018

TEST REPORT ON IMPACT VALUE OF AGGREGATES

*** Customer**	:	**Asst. Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore.
*** Agency**	:	**Technical Manager (West),** KRIDL, Bangalore.
*** Name of Work**	:	Improvements to Roads and asphalting at pipeline road left side and other roads in Mallasandra Ward No.13 in Shettyhalli Sub Division , BBMP, Bangalore.
*** Reference**	:	BBMP/EE/DD/WO/147/2017-18 Dated: 21.12.2017
*** Sample ID**	:	Hot mix plant, Bangalore.
*** Type of Mix**	:	Bituminous Concrete
Technical Reference	:	IS: 2386 (Part- 4)-1963 (RA-2011)
Date of Testing	:	10..01.2018

Sl No.	Details	Trial No.		Average
		1	2	
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	386	388	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	82	83	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	304	305	
4	Aggregate Impact value = percent fines 100* (W2/W1) percent	21.24	21.39	**21.32**

*Information is furnished by the Customer/Representative.

Comments:

→ Maximum allowable Aggregate Impact value for Bituminous Concrete is 24%

Note:

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AE-13

ಸಹಾಯಕ ಕಾರ್ಯನಿರ್ವಾಹಕ ಅಭಿಯಂತರರು
ಶೆಟ್ಟಿಹಳ್ಳಿ ಉಪವಿಭಾಗ, ದಾಸರಹಳ್ಳಿ ವಲಯ
ಬೃಹತ್ ಬೆಂಗಳೂರು ಮಹಾನಗರ ಪಾಲಿಕೆ

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Job No.: CTCE/BBMP/KRIDL/W.No.13/BC/AIV/2017-18 10..01.2018

TEST REPORT ON IMPACT VALUE OF AGGREGATES

* Customer	:	**Asst. Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore.
* Agency	:	**Technical Manager (West),** KRIDL, Bangalore.
* Name of Work	:	Improvements to Roads and asphalting at pipeline road left side and other roads in Mallasandra Ward No.13 in Shettyhalli Sub Division , BBMP, Bangalore.
* Reference	:	BBMP/EE/DD/WO/147/2017-18 Dated: 21.12.2017
* Sample ID	:	Hot mix plant, Bangalore.
* Type of Mix	:	Bituminous Concrete
Technical Reference	:	IS: 2386 (Part- 4)-1963 (RA-2011)
Date of Testing	:	10..01.2018

Sl No.	Details	Trial No.		Average
		1	2	
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	379	382	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	78	79	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	301	303	
4	Aggregate Impact value = percent fines 100* (W2/W1) percent	20.58	20.68	**20.63**

*Information is furnished by the Customer/Representative.

Comments:

→ Maximum allowable Aggregate Impact value for Bituminous Concrete is 24%

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Job No.: CTCE/BBMP/KRIDL/W.No.13/BC/Shape.T/2017-18 10.01.2018

TEST REPORT ON FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

* Customer	:	**Asst. Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore.
* Agency	:	**Technical Manager (West),** KRIDL, Bangalore.
* Name of Work	:	Improvements to Roads and asphalting at pipeline road left side and other roads in Mallasandra Ward No.13 in Shettyhalli Sub Division , BBMP, Bangalore.
* Reference	:	BBMP/EE/DD/WO/147/2017-18 Dated: 21.12.2017
* Sample ID	:	Hot mix plant, Bangalore
Technical Reference	:	IS : 2386(Part -1)-1963 (RA-2011)
* Type of Mix	:	Bituminous Concrete
Date of Testing	:	10.01.2018

Sl.No.	Description	Result
1	Flakiness Index	11.60%
2	Elongation Index	13.38%
3	Combined Flakiness & Elongation Index	24.98%

*Information is furnished by the Customer/Representative.

Comments:

→ Maximum allowable Flakiness & Elongation Index for Bituminous Concrete is 30%

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ನಮ್ಮಲ್ಲಿನ ಪರೀಕ್ಷೆಗಳಿಗೆ ಸಂಬಂಧಪಟ್ಟಂತೆ ಯಾವುದೇ ಅಭಿಪ್ರಾಯ, ದಾಖಲೆಗಳು ಬೇಕಾದಲ್ಲಿ ಮೂಲ ಪತ್ರಿಕೆಯೊಂದಿಗೆ ಬೆಂಗಳೂರು ಮಹಾನಗರ ಪಾಲಿಕೆ ಕಛೇರಿಯ ಪತ್ರವ್ಯವಹಾರ ಮಾಡತಕ್ಕದ್ದು

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* Customer	:	**Asst. Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore.
* Agency	:	**Technical Manager (West),** KRIDL, Bangalore.
* Name of Work	:	Improvements to Roads and asphalting at pipeline road left side and other roads in Mallasandra Ward No.13 in Shettyhalli Sub Division , BBMP, Bangalore.
* Reference	:	BBMP/EE/DD/WO/147/2017-18 Dated: 21.12.2017
* Sample ID	:	Hot mix plant, Bangalore
Technical Reference	:	IS : 2386(Part -1)-1963 (RA-2011)
* Type of Mix	:	Bituminous Concrete
Date of Testing	:	10.01.2018

Sl.No.	Description	Result
1	Flakiness Index	12.52%
2	Elongation Index	13.60%
3	Combined Flakiness & Elongation Index	26.12%

*Information is furnished by the Customer/Representative.

Comments:

→ Maximum allowable Flakiness & Elongation Index for Bituminous Concrete is 30%

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ಬೃಹತ್ ಬೆಂಗಳೂರು ಮಹಾನಗರ ಪಾಲಿಕೆ
ನಂ. ೨೦, ೧ನೇ ಮಹಡಿ, ರಮಣಶ್ರೀ ಬಡಾವಣೆ, ಬೆಂಗಳೂರು